

# SCIENCE & GOVERNMENT REPORT

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## **Research Costs to Skyrocket, New NSF Study Forecasts**

Pushed by rising costs for facilities and sophisticated equipment, plus salary competition for a demographically shrinking pool of scientists and engineers, the financial needs of academic research will increase over the next decade by 250 percent in current dollars, assuming modest inflation and present growth rates in the scientific enterprise.

That's the forecast in a report now circulating from the National Science Foundation's internal think tank, the NSF Division of Policy Research and Analysis. The main conclusion of the barebones sketch of the future is that academe will require enormously greater resources for research merely to maintain present activities.

The attempt to foretell the financial needs of university-based science is contained in "Future Costs of Research: The Next Decade for Academe" (11 pages, no charge, available from National Science Foundation, PRA, R. 1233, 1800 G St. NW, Washington, DC 20550; tel. 202/357-9689.)

Drawing upon a "long-term simulation of total US academic research and development expenditures,"

### **British Politics Embracing R&D—Page 5 Reagan R&D Aide: Low Profile—Page 8**

the NSF forecast assumes only a maintenance of current levels of effort, without "major new initiatives." From this bleak perspective, it arrived at its conclusion that, in real terms, "the total cost of supporting a researcher will increase dramatically during the next decade."

Specifically, it continued, "A person-year of senior academic R&D effort [for salary and all other costs] will increase from the present level of \$155,000 per R&D FTE [full-time equivalent] to a 1996 level of \$180,000-\$205,000 in constant dollars."

Intensified competition for scarce manpower and an aging glut among academic researchers were identified in the forecast as major sources of higher costs. "At present," the report states, "there are about 64,000 academic R&D scientists and engineers. If long-term growth rates are to be maintained, this number must grow to over 80,000 during the coming decade. Replacement of expected general attrition would require about 25,000 over the same period." Maintaining present salary growth of 2-3 percent a

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## **Cornell Reverses Stand, Admits "Error" by Accused Researcher**

After five years of stonewalling in defense of a high-ranking medical researcher accused of several episodes of scientific misconduct, the administration of the Cornell University Medical College (CUMC) has publicly conceded that a problem may exist, after all.

The researcher is Jeffrey S. Borer, MD, a CUMC faculty member who holds an endowed chair in cardiology at New York Hospital-Cornell Medical Center. Acknowledging, after strong denials, that an "error" has been "confirmed" in a 1983 paper co-authored in the *American Journal of Cardiology* by Borer, Cornell announced on April 17 that "the Medical College has taken steps, with Dr. Borer's full cooperation, to review and monitor research and training activities under Dr.

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## **In Brief**

**The Price of Pork:** \$20,000 a month is the fee that Arizona State University is paying its Washington representative, the formidable Cassidy & Associates lobbying firm, the *Arizona Republic* reports. University officials confirmed the figure to SGR, noting, though, that expenses—a few hundred to a few thousand per month—are extra. ASU recently signed on for a second year of Cassidy's efforts, which have so far yielded \$5 million toward a sought-after \$25 million in federal appropriations for a Center for Science and Engineering Technology. The firm, which represents over a score of universities, recently signed up a new client: the University of Utah.

Proprietor Gerald Cassidy confirmed to SGR that he's close to signing a deal to represent one of the major contenders for the Superconducting Super Collider. The unidentified client is said to be university-state combine that's been organized to pursue the big prize. The matter is of considerable interest to other contenders, since Cassidy's firm has an astonishing record of success in delivering for its clients.

The management of the American Psychological Association is frothing over the lineup of approved candidates to head the National Institute of Mental Health. According to a protest that the APA sent to Health and Human Services Secretary Otis Bowen, the initial screening has produced "11 white male psychiatrists"—a selection, says APA, "that completely ignores the breadth and scope of mental health concerns" and professionals. Two weeks later, still no reply from Bowen.

## ... Case Would Have Died if Left to Cornell and NIH

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Borer's supervision."

The Borer case, first reported by SGR (November 1 and 15, December 1, 1986), is notable because it reflects the scientific leadership's reluctance to confront the reality of tawdry practices in research—until its nose is rubbed in them.

The investigation was pushed upon a reluctant bureaucracy by a former Cornell colleague of Borer, Jerome G. Jacobstein, MD, who persisted with his accusations long after Cornell and the National Institutes of Health sought to discredit Jacobstein as a crank. Jacobstein, who is head of Nuclear Medicine at Graduate Hospital, Philadelphia, spent \$13,000 of his own funds to pay a lawyer to pursue what he regarded as a case of individual scientific misconduct compounded by a cover-up by Cornell and an inept, drowsy response by NIH. Without Jacobstein's determined prosecution of the case, and the bulldog performance of his attorney, Harold Green, a Washington law professor, it is a near certainty that the charges would long ago have been dropped down the bureaucratic memory hole both by Cornell and NIH.

### Final NIH Report Coming Soon

Cornell announced the turnabout shortly after receiving a near-final draft report of a dawdling NIH investigation that it had strongly denounced two years ago as unwarranted. The NIH report deals with a variety of allegations against Borer, and concludes that most are valid or that evidence is lacking to support a conclusion one way or the other. The final report is due to be issued sometime in the next few months, but unless a radical alteration is made in the document, Jacobstein stands vindicated in his long and lonely campaign.

The scrutiny which Cornell has announced for Borer's work is strong stuff to be endured by a highly acclaimed senior researcher. As stated in the Cornell announcement, it will "include":

- "a review by the Chairman of the Department of Medicine and Chief of Division of Cardiology of Dr. Borer's supervision of research fellows and medical students, to assure that they receive proper training in clinical research."

- "a special internal review of all research manuscripts from Dr. Borer's laboratory for a period of at least one year."

- "a review of a sample of Dr. Borer's recent research publications by qualified scientists at the Medical College to insure that none of the problems raised during the NIH investigation is present."

Jacobstein, who shared a cardiology-research labora-

### Jacobstein Hits CUMC Report

Jerome Jacobstein, MD, the long-maligned whistle blower in the scientific misconduct case at Cornell University Medical College, says he's pleased that CUMC, "after five and a half years of stonewalling," is paying attention to the charges he raised against his former CUMC colleague, Jeffrey Borer, MD. But Jacobstein, in a statement jointly issued April 23 with his attorney, Law Professor Harold Green, of George Washington University, indicated that he's still pursuing the CUMC administration for its role in the affair, even if it is prepared to jettison Borer, one of its star researchers.

Cornell conceded on April 17 that an error—originally reported by Jacobstein—had been "confirmed" in a paper co-authored by Borer, and it said that all of Borer's research and training activities would be subjected to a special review. In response, Jacobstein and Green stated that the CUMC statement "falls short of candor." In bringing charges against Borer, they continued, Jacobstein was not only concerned about errors in publication, but also that "Dr. Borer had led a medical student to believe that it was not wrong to misrepresent research methodology."

The Jacobstein-Green statement also charged that Cornell's 1981 investigation of the charges raised by Jacobstein "can hardly be considered adequate." In the NIH investigation of the charges, they frequently referred to Cornell's performance as a "whitewash," but didn't use that term in their April 23 statement.

Finally, the Jacobstein-Green statement said that Jacobstein had initially sought to have the case investigated and settled within the Cornell University family, but that "These efforts collapsed when the University's Deputy Counsel acknowledged that he was representing only the Cornell University Medical College and that his primary purpose was to defend CUMC's December 1981 decision [exonerating Borer]."

As a connoisseur of scientific misconduct cases, SGR can state that the CUMC administration has behaved despicably in this affair, and if the Keystone ethics cops at NIH permit it to get off without penalty, the issue warrants Congressional attention.

tory at Cornell with Borer from 1979 to 1982, had accused Borer of several misdeeds in the conduct and reporting of research. The allegations included pressuring a student author to misrepresent the methodology employed in a series of cardiology experiments; misstating the controls in an experiment; making unjustified

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## ... Admission Conflicts with Strong Denial in 1984

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changes in a research manuscript Borer and Jacobstein jointly authored, and incorrectly stating that participants in a series of cardiology tests, reported in the April 1983 *American Journal of Cardiology*, had been off heart medications for a specified period.

In its announcement of plans to review Borer's work, CUMC referred only to the allegation about erroneous reporting of medication, and stated that "Cornell found no evidence of intentional fraud by" Borer. The only Cornell administrator named in the announcement, Margaret Moore, Associate Director for Public Affairs, is quoted as stating:

"This was a case of careless documentation and reporting by Dr. Borer and his research associates. Certain of the procedures used in recording and analyzing the data and in the reporting of the information in the published paper were found to be below acceptable standards for clinical research. Although Cornell found no evidence that the research was deliberately misrepresented, any errors in a scientific report, regardless of origin, are viewed as serious and unacceptable. The actions taken by the Medical College reflect our concerns for the integrity of our research program."

### Cornell Revises Conclusion

The Cornell statement, attached to the name of a relatively low-ranking official at the school, conflicts sharply with the statement issued in 1984 by the Secretary of the Medical College, Joanne Blauer, in response to Jacobstein's charge that Borer had misstated the medication record of patients in the April 1983 AJC report. Borer's AJC paper stated that none of 54 patients in the test series had received the heart drug propranolol "for at least 24 hours prior to the study."

When Jacobstein challenged that statement as erroneous, Borer wrote to the editor of the AJC, stating that "recent review of the data books" showed that four patients had received "some propranolol, usually in small amounts, the preceding day." Borer conceded some uncertainty about 10 other patients. Blauer, speaking in behalf of Cornell, came to Borer's defense with a statement that denied "fraud" or "misconduct" and that asserted: "We have spent well over two years investigating and responding to allegations. At this time the Medical College is ready to put this matter to rest."

Jacobstein, however, persisted with his allegations—and now Cornell had acknowledged that it was in error in dismissing his charges as unwarranted. The April 17 statement from CUMC blandly states that:

"Cornell has confirmed the error in recording the use of the propranolol. At first it was thought that only four

of 54 patients had received propranolol and Dr. Borer so notified the journal editor. Now, it is known that 14 of 54 patients received propranolol and Dr. Borer has so notified the journal."

The Cornell announcement did not include an expression of appreciation to Jacobstein for assisting the institution in its avowed purpose of maintaining "the integrity of our research programs."

That's not surprising, of course. Feelings at Cornell are raw about Jacobstein having exposed a situation whose potential for trouble is substantial. Cornell is heavily dependent on NIH money for research and training. Jacobstein has been contending not merely that Borer engaged in misconduct but that Cornell attempted to cover up the case. If the final report upholds Jacobstein's charges, it would be appropriate for NIH to consider whether Cornell provides a suitable atmosphere for spending the taxpayer's scarce research money.—DSG

### Reprieve for NAS Journal?

*Issues*, the National Academy of Sciences quarterly journal, may not be going under, after all. Scheduled to terminate publication this summer because of weak circulation, *Issues* has been thrown a lifeline by the University of California, which is offering \$150,000 a year for three years to keep it going. Under a plan that's looking promising, the journal would remain housed and edited at the Academy.

### House Creates S&T Task Force

A 12-member Task Force on Technology Policy has been established by the House Science, Space, and Technology Committee, with Rep. Buddy MacKay (D-Fla.) as Chairman. The new group follows the Committee's Task Force on Science Policy that last year completed a two-year series of hearings and studies.

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## ... Universities Will Face More Competition in Hiring

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year would increase average compensation from \$54,000 (in 1984 dollars) to \$64,000-\$70,000 by 1996.

But, the report continues, with an impending retirement boom and the population of 22-year-olds in a decline that will continue until 1996, higher salary growth may be needed to maintain growth in the ranks of academic research. Extrapolating from population trends and academic patterns, the NSF report states that "In terms of a 'need' based on constant BS production levels equal to that for 1983, the shortfall over the next 25 years would be in the neighborhood of 700,000 potential scientists and engineers. With an unchanging PhD salary structure, PhD production rates will probably mimic changes in BS production, lagged by about eight years . . . Consequently, the doctorate supply will diminish after the early 1990s, unless PhD salaries accelerate soon."

### *Immigration Won't Fix It*

Immigration "will probably only partially mitigate the expected shortages," NSF predicted, noting that "the academic community must simultaneously produce more PhDs and successfully compete with industry and government for new faculty PhDs in a sellers' market." Industry was depicted as a ravenous competitor: "Even if all the new PhDs were hired by industry, extrapolated industrial demand would not be filled," the NSF reports states. "Consequently," it concludes, "unless there is an immediate acceleration of salaries or other stimulus to substantially increase PhD production, increased competition among academe, industry, and government for natural scientists and engineers PhDs in the years ahead is likely."

Looking at budgets for research facilities, the NSF forecast states that "increasing capital costs for state-of-the-art equipment and increasing capital stock requirements for researchers imply that equipment budget share should now be growing, rather than hold level at 7.5 percent [of total research budgets]." In 1984 dollar amounts per researcher, the suggested increase would work out to \$240,000 of "facility stock" by 1991, compared to the present \$220,000. The average equipment stock per researcher was currently placed at \$50,000, "whereas an optimal level," the NSF report states, "would be around \$70,000."

As for indirect costs of research, the forecast notes that "Many believe that these costs will probably continue to increase their share of the total R&D budget, although not so rapidly as in the past, because of increasing pressure for restraint in these areas."

Summing up, the NSF report states that the predicted cost increases translate into "a projected doubling of current costs over the next ten years"—to \$290,000 per researcher, for all expenses. "This means that the annual expenditures to universities and colleges from all sources would have to increase more than \$7 billion by 1996 in real terms. This represents a cumulative expenditure of \$30 billion to \$40 billion (in real terms) over the decade.

"If this were to be accomplished through annual increments," the report continues, "it would mean that R&D budget growth rates of the previous decade would have to be increased by more than a percentage point," following, NSF points out, recent growth rates that have been "among the highest ever."

"On the other hand," it adds, "if it were desired to eliminate equipment and facility shortfalls in a single year, and keep them at an efficient level, a one-year increment of over 25 percent to 40 percent would be necessary."

In a closing note, the report states: "If there is a national desire to accelerate the number and/or quality of our natural scientist and engineer researchers and graduate students, to engage in more technologically focused research, to build very large science projects and facilities, to experiment with new methods, or to implement any other such initiatives, budget growth beyond that projected here will be necessary."

### *Shifts Reshape Market for PhDs*

Intiguing shifts in employment patterns of PhD scientists and engineers have been turned up by the latest Survey of Doctorate Recipients, a long-running series that the National Academy of Sciences administers for the National Science Foundation. The Survey covered about 13 percent of all doctorates awarded between 1942 and 1984.

Between 1973 and 1985, the Survey found, industry's share of the PhD population rose from 24 to 31 percent of the national pool, but the biggest growth sector in industrial employment of PhDs wasn't in research and development. Rather, it was in the category of "sales and professional services"—which zoomed over six-fold, from 3000 to 19,900. During the same 1973-85 period, the number of PhDs employed in industrial R&D merely doubled, from 23,800 to 48,500.

What duties accounted for the swelling in the ranks of sales and professional services? An NSF analysis

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## Britain: Political Parties Sparring on R&D Policy

*London.* The state of science and technology in Britain is shaping up as a major issue in the next national election, which is expected to be called some time this year. All the major parties, including, somewhat belatedly, the ruling Conservatives, have addressed the issue in their manifestoes.

Credit for this unusual unanimity of attention goes to sustained lobbying by various groups of scientists. They have marshaled doleful statistics showing that Britain is a laggard among industrialized nations in supporting research, and that it has lost its longstanding preeminence in many major disciplines. The government must spend more on science and technology, the science lobbyists insist.

These complaints, which have received sympathetic attention from press and television, have been embraced by the opposition Labor, Social Democrat, and Liberal parties. All have said that the Conservatives are wrecking British science, and they agree with the scientists' call for more money.

The din now has stirred Prime Minister Margaret Thatcher, who, though leading in the polls, has a per-

sonal reason to be sensitive to the electoral potential of the science issue. Mrs. Thatcher is a trained chemist, and has always regarded herself as the guardian of scientific interests in government affairs. According to Whitehall sources, she has come around to the conclusion that she has not given the subject the full attention that it deserves.

Accordingly, she has asked the government's science adviser, John Fairclough, to design remedies for her consideration. In terms of career pattern, Fairclough is something of an oddity in the upper reaches of government science affairs here. He is not a career civil servant (which may make it easier for him to propose sweeping changes.) He took the advisory job last year on detail from the UK subsidiary of IBM, where he was a senior manager. IBM is paying his salary, which is considerably more than the rate for government officials at his level. An affable, energetic character, Fairclough has gone at his job with gusto and he seems not to refrain from opportunities to stir things up.

In the process, he has annoyed people, which is what

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## ... Industry Takes Growing Share of PhD Manpower

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of the Survey states that 57 percent of the industrial PhDs "reporting sales or professional services as their major activity in 1985 were psychologists who were generally providing professional services. As a proportion of PhD scientists and engineers in industry, psychologists increased from 6 percent in 1973 to 12 percent in 1985." Taking into account sales and professional services provided by PhDs in industry, academe, and other sectors of the economy, NSF reports that "Employment in these activities rose at an annual rate of 10.7 percent during 1983-85 (from 30,000 to 36,500), more than twice the relative increase noted for all PhD scientists and engineers."

The Survey found that academe remains by far the biggest employer of PhD scientists and engineers, but its share has been dropping, while industry's has been rising. In 1973, academic institutions employed 130,000 of these PhDs, which amounted to 58.7 percent of the national total. By 1985, the PhDs on campus had risen to 211,000, but the percentage was down to 52.8 percent.

During the 1973-85 period, industrial employment of PhDs rose from 53,400 to 125,800—an increase from 24.2 to 31.4 percent of the national pool.

The Survey also found that the PhD remains relatively rare in engineering, accounting for a cumulative total of 65,900 in 1985. The number of science

PhDs was put at 334,500, including 64,000 social scientists and 52,200 psychologists. In 1984, 2900 engineering PhDs were awarded, an increase of 4.8 percent from the previous year. NSF noted that 43 percent of the engineering PhDs were received by non-US citizens on temporary visas, and that about half of them remained in the US.

Rates of employment growth in the various sectors have also been changing, NSF reported, with academe clearly going up and industry apparently declining. During 1983-85, academic employment of PhDs increased by an annual average of 3.9 percent, up from 2.4 percent in 1981-83. Industrial employment of PhDs retained positive growth, but declined from 7 percent to 5.3 percent. The NSF analysis cautions, "It is still too early to determine whether the acceleration of employment in academia and slowdown in industry represents a trend reversal."

The shifting age profile of the PhD working force is reflected in the Survey's findings. In 1973, 76 percent of the academics were under 50, and 27 percent were under 35. By 1985, 67 percent were under 50 and only 13 percent were under 35.

(A 7-page summary and analysis of the Survey of Doctorate Recipients, NSF 87-301, is available without charge from NSF, Division of Science Resources Studies, 1800 G St. Nw., Washington, DC 20550; tel. 202/634-4622.)

## ... Selectivity Rather than More Money Holds Favor

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traditional civil servants strive to avoid. Says one civil servant who has observed Fairclough at work, "If by being a little too enthusiastic, he gets the boot, I don't suppose he would be too worried. John's not a person who would be unemployed for long."

The proposals requested by Mrs. Thatcher are still in the study mill, but early indications suggest that their focus will not be on more money for research and development; nor is there likely to be support for gathering the government's widely dispersed research activities into a super Ministry of Science, which is what the Labor Party has favored. Rather, it's believed that the Fairclough operation is pointed toward evolving a different system for deciding where the R&D money is to be spent and for shifting funds in response to opportunities. Though there's no favor for a goliath ministry, support may emerge for creating a government "supremo" for research and for shunting into civilian areas some of the large sums that Britain now spends on military R&D.

### *A Ministerial Ally*

Fairclough may find a strong ally in Kenneth Baker, head of the Department of Education and Science, which is nominally in charge of research policy. Baker, a resourceful politician, made a name for himself in previous posts in the Thatcher Administration as Minister for Information Technology and as the official in charge of local government. He is considered a possible leader of the Conservatives after Mrs. Thatcher departs. Unlike the great majority of the Parliament, he has a keen and informed interest in science and technology.

Baker showed sensitivity to the science issue by reacting swiftly early last month to a chorus of scientific anguish that was evoked by the latest in a series of crises in funding. He promptly added nearly \$25 million to the budgets of the five research councils which underpin academic research in Britain, bringing the total up to \$1.1 billion this year.

Like many who today occupy similar posts in other countries, Baker thinks universities should do more short-term research useful for industry. But that concern doesn't harmonize with what the scientists have generally been complaining about—shortfalls in support of basic research. Baker knows the numbers on this issue very well, since some of the most alarming studies have been prepared by the Advisory Board for the Research Councils, a Whitehall body which reports directly to him. The Board has been painting an alarming picture of UK spending on pure science dropping behind the comparable budgets of the other main

industrial nations.

Amid all this furor, there is a lot of agreement about the need for greater selectivity in backing R&D, with many observers noting that Britain lags behind Japan, France, and other nations in techniques for picking winners. The consensus on weakness in selectivity has, in turn, drawn attention to the Britain's 50 or so universities, which annually receive a total of some \$3.6 billion in government support, yet largely run themselves as independent and unaccountable fiefdoms.

### *A New Industrial Think Tank*

With its faith in the marketplace, the Conservative government has an inbuilt reluctance to empower civil servants to decide which areas of research are to be emphasized. So, it is working toward a halfway measure, through the establishment of a think tank, which would mainly be funded by industry. Currently in the works, and to be known as the Center for Exploitation of Science and Technology, this is to be an independent body which will feed the government ideas about R&D priorities.

The introspection about R&D affairs has also brought attention to the large chunk absorbed by the military establishment. Britain's R&D spending, about evenly divided between sources in government and industry, totals approximately \$14.4 billion. (In the US, with roughly four times the population of the UK, the comparable figure is about \$120 billion). Of the share provided by government, a little over \$3.2 billion is spent on defense R&D.

The political reality is that the Defense Ministry is politically powerful and not inclined to give up any part of its share. Science Adviser Fairclough is reported to be critical of the balance between military and civilian R&D. Among the ideas to be heard these days is one that calls for reducing the size and scope of some of the Defense Ministry's major research centers, such as the Royal Signals and Radar Establishment at Malvern, a world-renowned center in electronics. A possibility here is that part of the staff could be detailed to industry, which is crying out for electronics specialists, or even shut the place down altogether and let the marketplace determine the fate of the staff.

If such radical proposals ever come into the open, they would draw the bitter and powerful opposition of the Defense Ministry and its allies. But increasingly one hears it said that if Britain is to link its R&D capabilities to the need to compete in world markets, such radical changes are a necessity.—Peter Marsh.

(The author is technology correspondent of the *Financial Times* of London.)

# US Science Attaches: Who They Are, and Where Posted

*An underutilized resource for researchers seeking professional information in foreign lands is the corps of science counselors and attaches posted at US embassies and foreign missions. Since SGR last listed them (September 15, 1985), routine reassignments have produced enough changes to warrant an update; in addition, the science post at the Stockholm Embassy was discontinued last fall, while a new one has been established at the Ankara Embassy.*

*Several advisory notes about these officials: They rank low in the diplomatic pecking order and generally possess little influence in the embassies that house them. But, they usually have good contacts in the surrounding scientific community. Their responsiveness to inquiries varies according to their workloads, temper, and the reasonableness of requests. What's certain is that they're not on duty to serve as tourist guides for itinerant scientists. If so inclined, they can be helpful in identifying the performers and locale of particular lines of research, and in providing information about cooperative programs.*

*Addresses in most cases are under the Army or Fleet Post Offices (APO or FPO), which provide the most reliable mail connections to US embassies and missions. Following is the current list provided to SGR by the State Department, including, in parenthesis, academic degrees.*

## Europe

Ankara, Turkey: N. John MacGaffin (BA, philosophy), Science Attache; tel. 265-54-70; address: APO NY 09254

Belgrade, Yugoslavia: Thomas Vrebalovich (PhD, engineering), Science Attache; tel. 645-655; address: AMCONGEN BEG APO New York 09213

Bonn, West Germany: Edward M. Malloy (MS, physical sciences), Science Counselor; tel. (0228) 339-3390; APO New York 09080

Budapest, Hungary: James S. Bodnar (MA, international relations), Science Attache; tel. 126-450; APO NY 09213 (BUD)

London, UK: James Devine (MPA, public administration), Science Counselor; tel. (01) 499-9000; address: Box 40, FPO NY 09510

Madrid, Spain: Ishmael Lara (BA, business administration), Science Attache; tel. 276-3400/3600; address: APO NY 09285

Moscow, USSR: John C. Zimmerman (PhD, physical science), Science Attache; tel. 252-24-51 through 59; address: APO NY 09862

Paris, France: Allen Sessoms (PhD, physical science), Science Counselor; tel. 42-96-12-02; 42-61-80-75; address: APO NY 09777

Rome, Italy: Gerald J. Whitman (BE, engineering), Science Counselor; tel. 6-4674; address: APO NY 09794

Warsaw, Poland: vacant; tel. 283-041; address: AMCONGEN (WAW) APO NY 09213

## US Missions in Europe

US Mission to International Organizations in Vienna, Austria: Carlton Stoiber (LLM, law), Science Counselor for Nuclear Policy; Maurice J. Katz (PhD, Physics), Science Counselor for Nuclear Technology; tel. (222) 31-31-55-11; address: APO NY 09108

US Mission to the European Communities: vacant; tel. (02) 513-4450; address: APO NY 09667

US Mission to Organization for Economic Cooperation and Development: Robert E. Carr (BA, political science), Science Counselor; tel. 45-24-74-31; address: APO NY 09777

## Latin America

Brasilia, Brazil: James Chamberlin (BA, math), Science Counselor; tel. (061) 223-0120; address: APO Miami 34030

Buenos Aires, Argentina: William S. Tilney (BA, geography), Science Attache; tel. 774-7611; 774-8811; 774-9911; address: APO Miami 34034

Mexico City, Mexico: Leroy Simpkins (BA, electrical engineering, MA, political science), Science Counselor; tel. 211-0042; address: US Embassy, Paseo de la Reforma 305, Mexico 5-DF

## East Asia and Pacific

Beijing, China: Pierre M. Perrolle (BS, engineering; PhD, political science), Science Counselor; tel. 52-3831; address: FPO San Francisco 96655

Jakarta, Indonesia: David P. N. Christensen (BS, physical science), Science Attache; tel. 360-360; address: APO San Francisco 96356

Seoul, Korea: Jerome Bosken (PhD, physics), Science Attache; tel. 732-2601 through 18; address: APO San Francisco 96301

Tokyo, Japan: Richard Getzinger (PhD, chemical engineering), Science Counselor; tel. 583-7141; address: APO San Francisco 96503

## Near East, South Asia, Africa

Cairo, Egypt: Francis X. Cunningham (AB, physical science), Science Counselor; tel. 355-7371; address: Box 10, FPO NY 09527

New Delhi, India: S. Ahmed Meer (BA, electrical engineering), Science Counselor; tel. 600-651; address: US Embassy, Shanti Path, Chanakyapuri 110021, New Delhi, India

Pretoria, South Africa: Gilbert Melese d'Hospital (MS, aeronautical engineering), Science Attache; tel. 28-4266; address: US Embassy, Thibault House, 225 Pretorius St. Pretoria, South Africa.

Tel Aviv, Israel: Anthony Rock (BS, biology), Science Attache; tel. (03) 654-338; address: APO NY 09672

## Canada

Ottawa: Francis Kinnelly (MA, international relations), Science Counselor; tel. (613) 238-5335; address: US Embassy, 100 Wellington St. K1P 5T1, Ottawa, Canada

## Science Adviser Graham Maintains Low, Low Profile

Presidential Science Adviser William R. Graham, the bureaucratic version of the stealth aircraft, wasn't there last month at the annual R&D budget meeting of the American Association for the Advancement of Science, thus setting another record in his remarkably invisible tenure—the first in the advisory post not to show up at the big AAAS pow-wow since it was established 12 years ago.

SGR has been told that Graham initially accepted, but then backed out when he learned that it was customary for the Science Adviser to answer a few questions. He sent an assistant in his place.

Meanwhile, Graham has remained aloof from Washington's small corps of science writers, which has had working, if not always congenial, relations with his various predecessors. In a chance encounter on Capitol Hill in early March, Graham responded to SGR editor Greenberg's suggestion for getting together with a suggestion to call his office for an appointment. Six calls have gone unanswered. Graham swept out most of the staff he inherited upon coming to the job from NASA, and replaced them with his own appointees, including a press officer whose principal duty appears to be squelching communication with the press.

Some persons acquainted with Graham's operations employ a mixture of psychiatric and gutter terminology to express their views. But he has his supporters. One senior R&D official in a cabinet depart-

ment told SGR, "He may not be too good on outside relations, but he's doing all the right things inside." Asked for specifics, the admirer declined.

Graham has spoken at a number of professional meetings in recent months, in and out of Washington. A quite sensible mathematician who chatted with him at a meeting came away favorably impressed. "He was thoughtful and attentive and seemed very intelligent," he said.

On the other hand, a foreign science mandarin who recently visited the capital managed to include Graham on his tour. An aide says he came away appalled. The impression was that Graham "seemed so small for the job." An opinion of Graham from a senior administrator in a big federal research operation is that "someone must of owed him something"—a reference to Graham's improbable appointment to the number two post at NASA in 1985, his subsequent ascent to Acting Administrator of NASA, and his appointment to the White House Science post after the Challenger catastrophe.

Prior to the NASA appointment, Graham, an engineer and physicist, was involved in defense contracting and was an adviser to the Arms Control and Disarmament Agency.

A Congressional aide who has observed a succession of Presidential Science Advisers in the witness chair puts the Graham appointment succinctly: "He's the least adequate of them all."

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